

Nov. 25th

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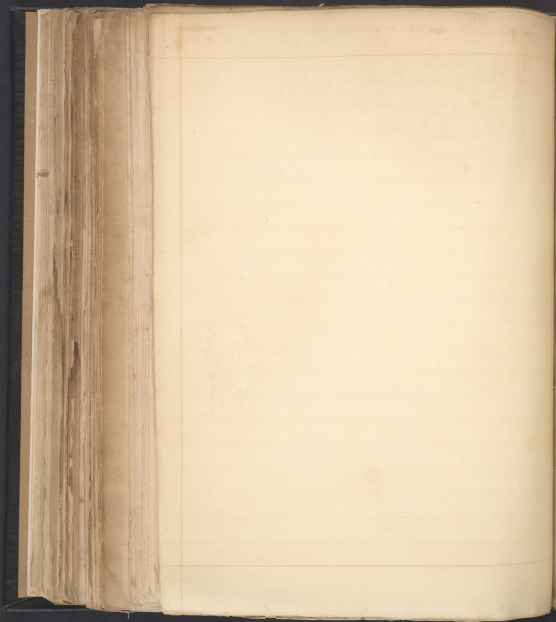
Thomas Shivers Jr.
M.D.
M.D. 1820

An Inaugural Dissertation
on
Vetanus.

Thomas Shivers Jr.
admitted March 4th 1820—

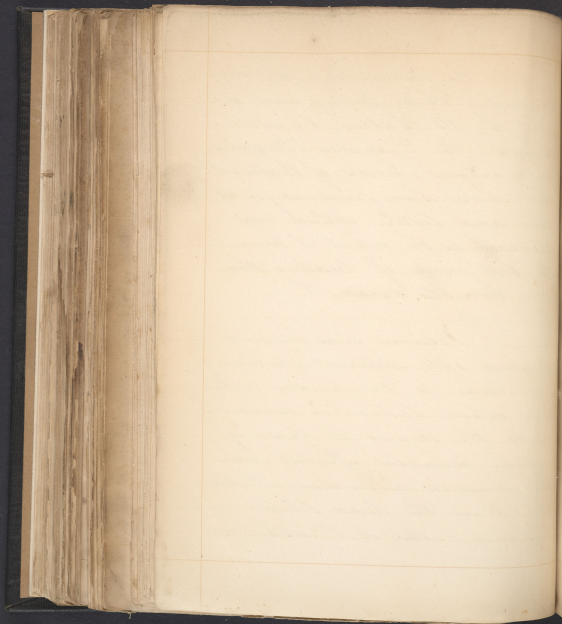
*The original of this
is in the
Library*

*Thomas O'Brien
and the West of 1850*



In the following paper an
Etanmus I shall give a brief ac-
count of its History, Symptoms,
Causes, the Diagnosis & Prognosis,
the various modes of treatment
that have been pursued for its
cure and lastly, deliver my
opinion as to what I conceive
the best mode of treating this
very horrible disease.

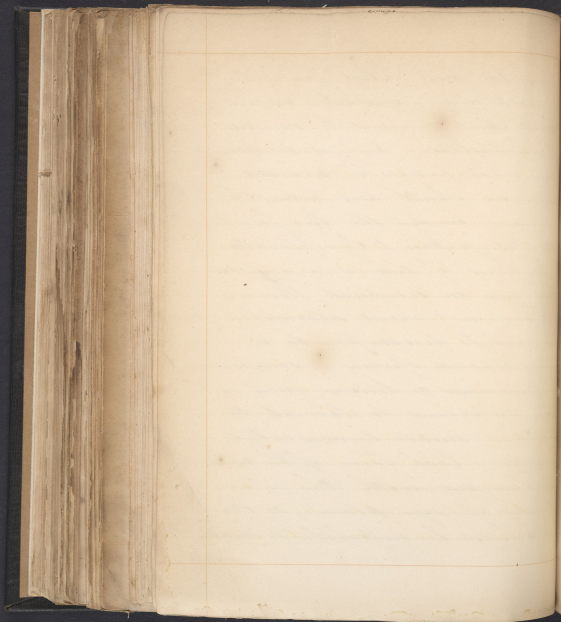
Etanmus was formerly
divided into different species,
according to the posture of the
body when labouring under it,
as to the degree of spasm of
certain muscles affected; when
those muscles have been affected
that draw the head backwards,
they have called it *Opiethotonus*.



when the head is bent forward
Eriophthalmos, and when we find
the patient inclined to one side
Pneurotholosis. These distinctions
are now properly exploded,
and we shall here notice the
disease, under the two forms,
the Idiopathic & Symptomatic.

The first of these, is a very rare
disease in temperate climates;
a warm & moist atmosphere
is said to predispose to it.

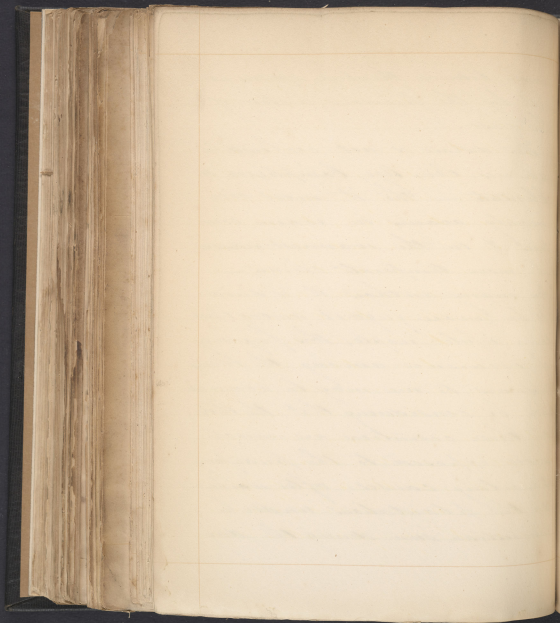
The second species is occasioned
by wounds or bruises, such as
are supposed to lacerate the
nerves, small tendons or liga-
ments—Each form of the disease
is attended with the same
train of symptoms, so that
it would be impossible to distin-



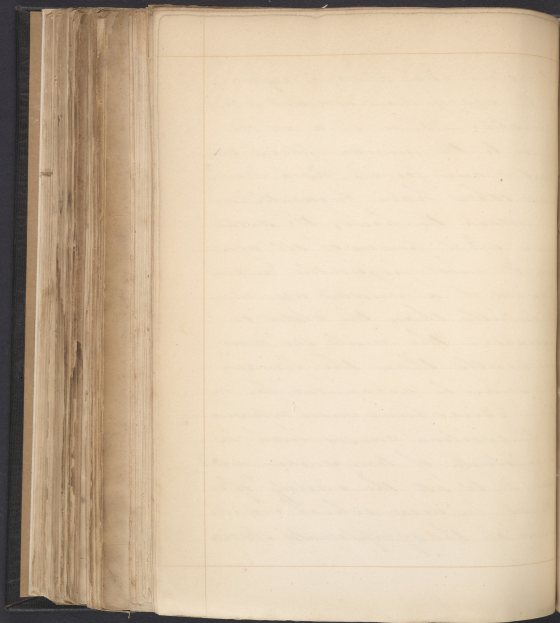
quish between the two species except by the previous history of the case.

This disease is not confined to Species, Sex, Age, Complexion or Climate — tho' it most commonly occurs in warm countries & in the warmest seasons of more temperate climates —

By many authors it is said to be more frequent among black than white people; this frequency of occurrence among the blacks appears to me may be accounted for, by considering that the blacks in these countries are much more exposed to the prejudicial & exciting causes, after working in the plantations, under a meridian sun during the day

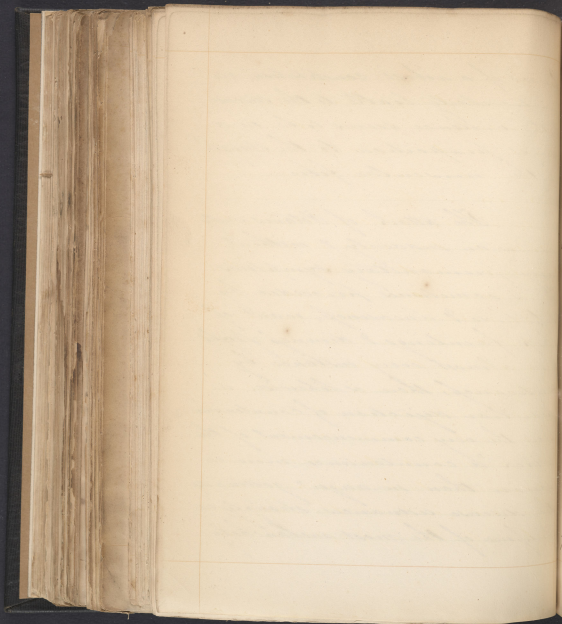


they often sleep at night, exposed
to the heavy dews incident to those
climates. That it is not con-
fined to the human species, we
have many proofs, Rush, Thwaites
and others have frequently seen
it attack the horse; the disease
may affect persons of all ages,
but it most frequently attacks
persons of a middle age, more
frequently than the older or
younger. The male sex more
frequently than the female,
this may be accounted for, by
the former being more exposed
to the exciting causes, such as
vicissitudes of temperature, night
air, & to all the variety of ex-
ternal injuries which usually
bring on the symptomatic species.



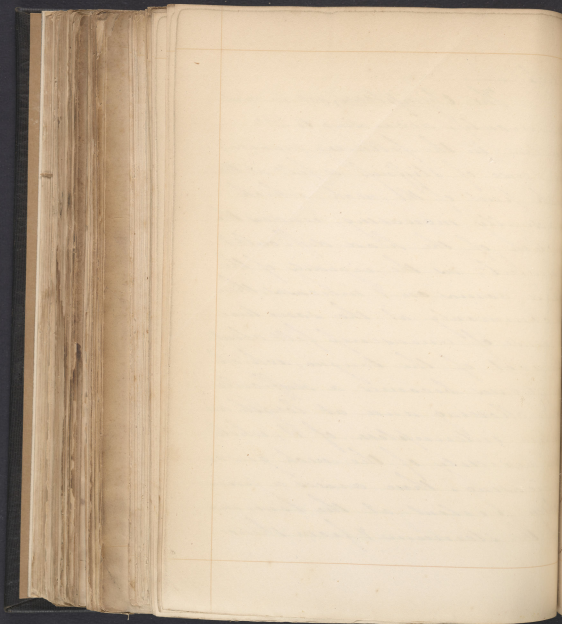
Persons of a robust constitution are particularly liable to the disease, & its violence seems to be in a direct proportion to the strength of the muscular fibre—

The attack of Pétanue usually comes on suddenly & without any premonitory symptoms; It is sometimes preceded by lassitude & uneasiness, want of sleep, faintings, & dimness of sight & in almost every instance by costiveness, there is likewise a peculiar dejection of countenance from the very commencement of the attack "a countenance more in sorrow than in anger" getting as the disease advances, strongly expressive of the most melancholy

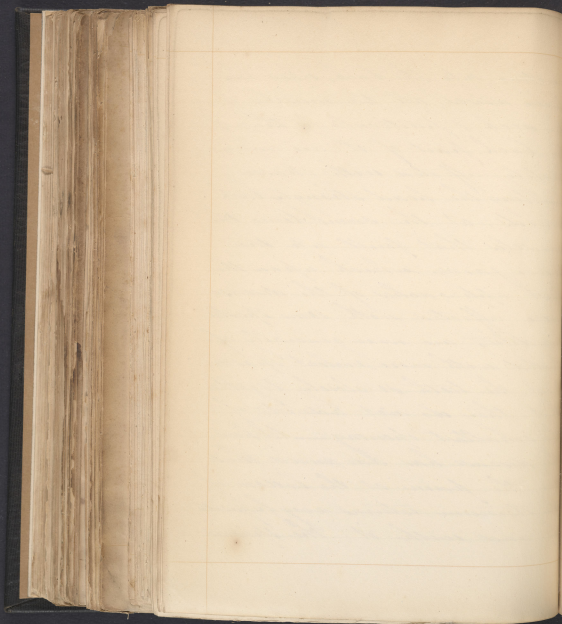


states —

The Symptoms, set in most commonly, according to Dr. Cullen in the following manner, "a sense of stiffness is felt at the back part of the neck, which gradually increasing, renders the motion of the head difficult & painful; as the rigidity of the head comes on & increases, there is commonly at the same time a sense of uneasiness felt about the root of the tongue, which by degrees becomes a difficulty of swallowing and at length an entire interruption of it; while the rigidity of the neck goes on increasing, there arises a pain, often violent at the lower end of the sternum & from thence

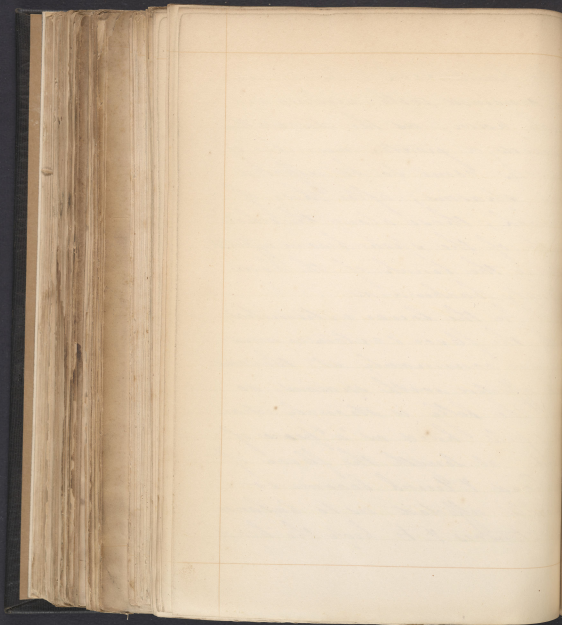


shooting into the back; when this pain arises, all the muscles of the neck & particularly those of the back part of it are immediately affected with spasm, pulling the head strongly backwards; at the same time the muscles that pull up the lower jaw, which upon the first approaches of the disease were affected with some spastic rigidity, are now generally affected with more violent spasm, & set the teeth so closely together that they do not admit of the smallest opening—When the disease has advanced thus far, the pain at the bottom of the sternum returns very frequently, and with it the spasms

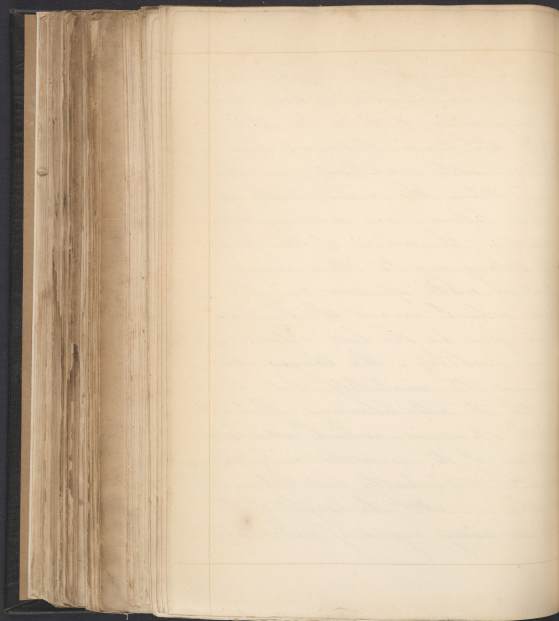


of the hind neck & lower jaw
are renewed with violence and
much pain, as the disease thus
proceeds, a greater number of
muscles come to be affected
with spasms; after those of
the neck, those along the whole
length of the spine become affected,
bending the trunk of the body
strongly backwards.

In the lower extremities,
both the flexor & extensor mus-
cles are commonly at the same
time affected with spasms, so
that the belly is strongly reha-
ted & feels hard as a piece of
board; at length the flexor of
the head & trunk become so
strongly affected as to balance
the extensors & to keep the head



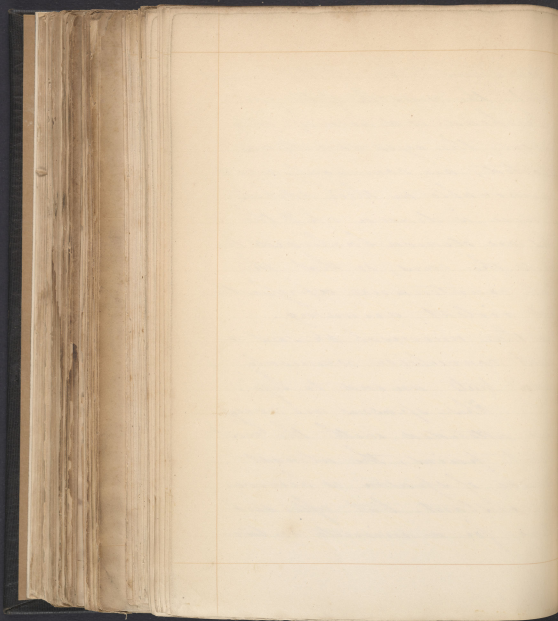
I trunk straight & rigidly ex-
tended, incapable of being moved
in any way; & it is to that
state the term Tetanus has
been strictly applied; at the
same time the arms, little af-
fected before, are now rigidly
extended, the whole of the mus-
cles belonging to them being
affected with spasms, except
those which move the fingers,
which often to the last retain
some mobility; the tongue also
retains its motility, but at
length it also becomes affected
with spasms, which attaching
certain of its muscles only, often
thrusts it violently out between the
teeth. — At the height of the
disease every organ of voluntary



motion seems to be affected, & amongst
the rest, the muscles of the face;
the forehead is drawn up into
furrows, the eyes sometimes
distorted, are commonly rigid
& immovable in their sockets;
the nose is drawn up & the
cheeks are drawn backwards to-
wards the ears, so that the
whole countenance expresses the
most violent grinning.

"Under these universal spasms a
violent convulsion commonly
comes & puts an end to life".

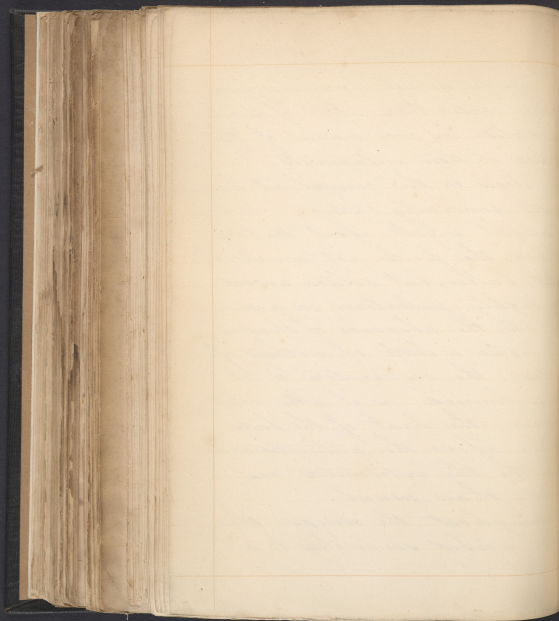
These spasms are every
where attended with the most
violent pains, the utmost
violence of spasm is however
not constant, but after sub-
sisting for a minute or two



the muscles admit of some remission
of their contraction, altho' of no such
relaxation as can admit of the
action of their antagonists.

The bowels in this complaint are
most generally costive; a sense
of weight is felt about the back
& loins, the pulse not much ex-
cited, fuller, but seldom exceed-
ing eighty pulsations in a min-
ute, in the absence of spasms
the pulse is little or nothing af-
fected; the respiration is at
times hurried, as if after violent
exercise; the heat of the body
rather above the natural stand-
ard, tho' the extremities are
colder than usual.

Throughout the disease, there
is a morbid sensibility to all

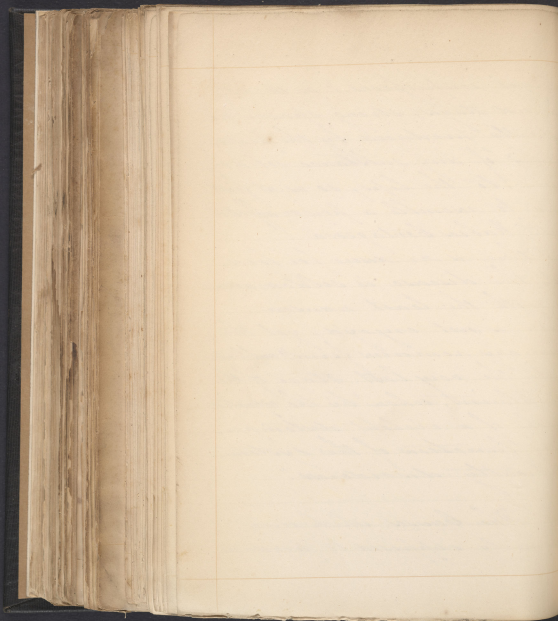


external impressions & in its ad-
vanced stages, strong spasms are
instantly produced by the presen-
tation of any substance solid or
fluid to the lips, so as at first
even to resemble a person affected
with *Rabies Caninosa*.

Tho' there is no desire for food,
yet the disease is seldom attend-
ed with the least nausea.

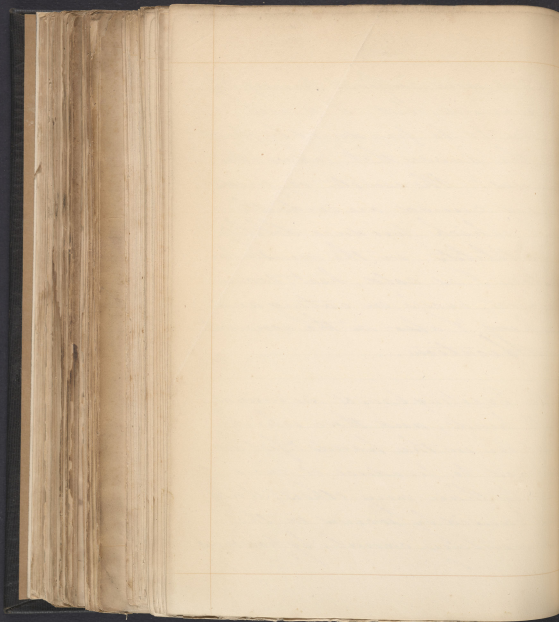
Speech is not enjoyed, yet the
memory remains firm & unintim-
ed to the very last stage of the
complaint, when "by the repeated
shocks of a violent storm, per,
every function of the system
is greatly disordered."

The Causes, which were
formerly supposed to produce



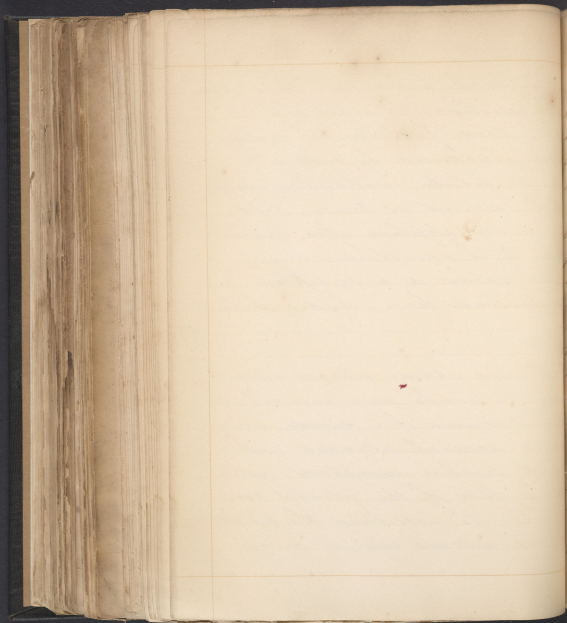
Retained were confined principally to wounds, but it is now known to be produced by almost all the causes that induce other diseases. The remote or predisposing causes are evidently those which produce debility & irritability in the muscular system, as cold, heat, severe exercise, except in eating and drinking & also in the sensual gratification.

The Exciting causes are wounds of all kinds, and those which happen in the hands & feet are supposed to produce it more readily than any other; it has been caused by worms in the alimentary canal, by poison



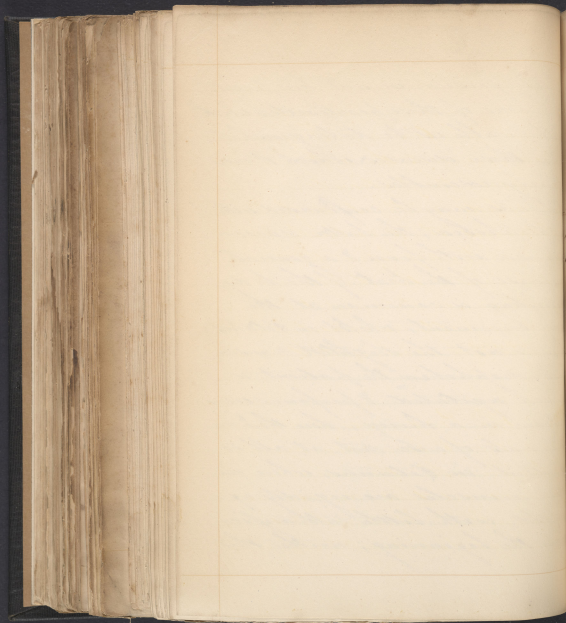
substances taken into the stomach,
parturition, the sight of food
after long fasting, the grating
noise produced by cutting a
pewter plate, certain emotions
of the mind as terror, cold
suddenly applied after intense
heat & it sometimes says Dr.
Koch occurs as a symptom in
the bilious fever, hydrophobia.

It may appear almost unneces-
sary to make any remark upon
the diagnosis of a disease, which
is in general attended with
such peculiar symptoms, yet as
it is often of the utmost conse-
quence to ascertain the nature
of the disease before it is com =



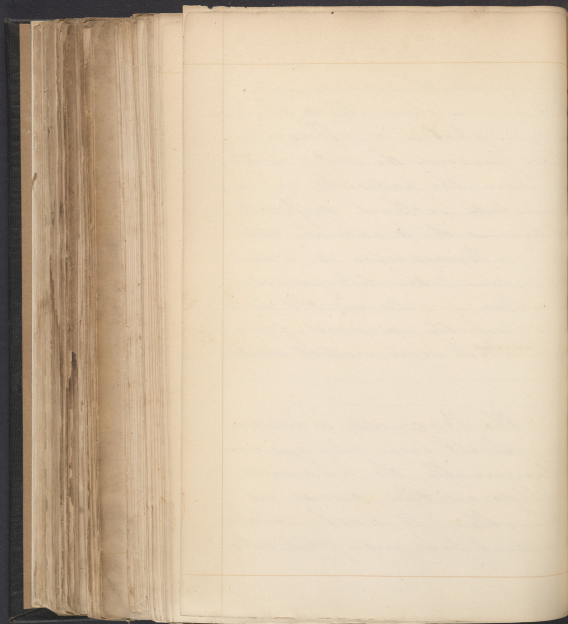
pletely formed, we will here point
out some of those peculiarities which
will enable us to distinguish it
from those diseases which it more
nearly resembles.

Tetanus may be confounded with
Hydrophobia, the latter is accom-
panied with fever & a general
increase of the heat of the body;
vomiting is common at the
commencement, whilst in Tetanus
there is not the slightest nausea;
in Hydrophobia the patient is
much agitated & performs every
action in a hurry, here there are
intervals of ease not at all so
evident in Tetanus, where cer-
tain muscles are rigidly ex-
tended, with little intermission
from the beginning; neither does

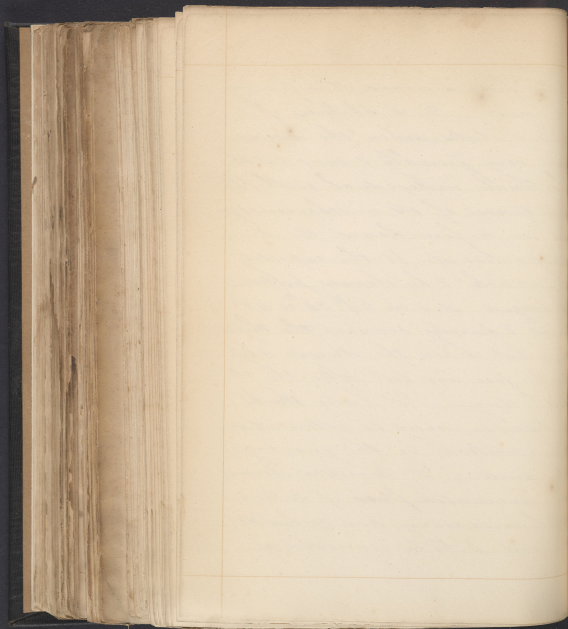


rigidity, nor the hardness in the
abdomen is observable in the other;
in Hydrophobia a sobbing inspira-
tion precedes the act of swallow-
ing & here the patients can swallow
their solids without difficulty;
in Tetanus it is entirely other-
wise; in Hydrophobia the patient
is delirious & the delirium itself
is peculiar; in Tetanus the mind
seems perfectly resigned, firm &
und^{isturbed} ~~unmoved~~ even until death.

The Prognosis, in Tetanus,
has hitherto been always most
unfavourable, the ancients
considered this disease as
incurable. It has been observed
in general to be most fatal when



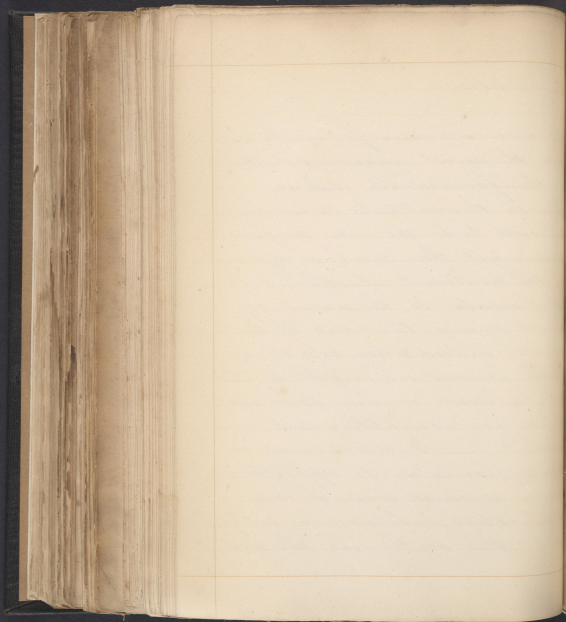
arising from a wound, than from any
other cause; Dr. L. Chalmers of St.
Bartholomew states, when "the disease
forms very quickly & invades the
unfortunate individual with the
whole train of its mischievous sym-
ptoms in a few hours, the danger
is proportionate to the rapidity
of the attack" & he observes "patients
thus seized, die in 24th, 36th or 48th
hours & scarcely survive the third
day, but when the disease is less
acute, few are lost after the 9th
or 11th day. Dr. Parry thinks
the danger may be estimated
in proportion to the quickness
of the pulse; Dr. Morrison observes,
"an increased flow of saliva,
where mercury has or has not
been used is to be regarded as



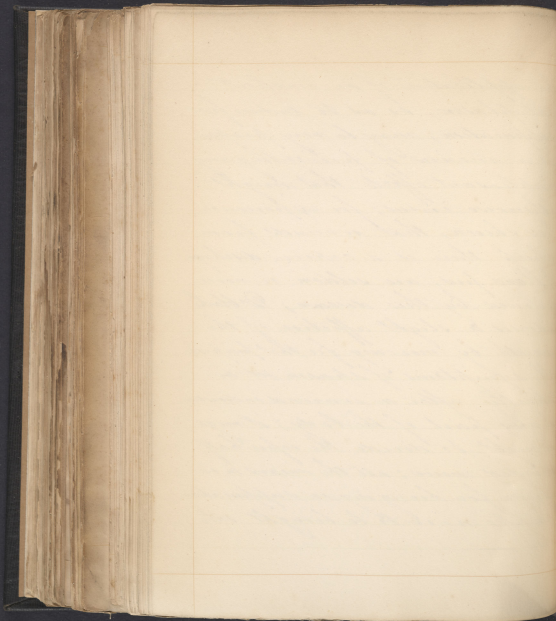
favourable.

It now remains for me to mention, the most approved Treatment in this formidable disease.

Though the symptomatic species may be allowed to be the more dangerous form, yet there can be no difference in the treatment of either, except what relates to the wound or local injury, the cause of the disease; indeed when once it is fairly formed we ought to place little reliance on any local application for combating such a complaint. — It is common in warm climates, to apply to a newly received wound some stimulating substance as oil of Turpentine or the like; this with

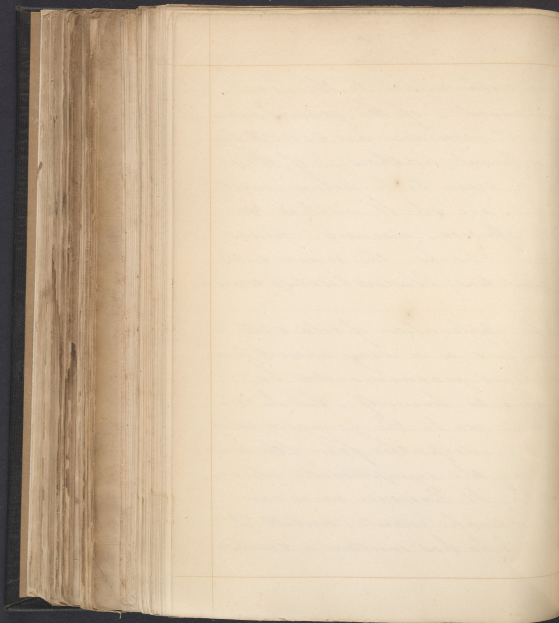


the application of an emollient
cataplasm, so as to induce free
suppuration, may be very proper
as a means of preventing any
unpleasant effects that might
otherwise ensue; for experience
has shown, that wounds from
which there is a copious discharge
of bland pus, are seldom or never
followed by this disease; Dr. Blane
advises a slight affection of the
mouth by mercury for that purpose.
If symptoms of spasm set in
shortly after a wound or laceration
of any part of the body, it might
be right to divide the before half
divided nerve; all the means in our
power for bringing on suppuration
are also now to be brought into
use. —

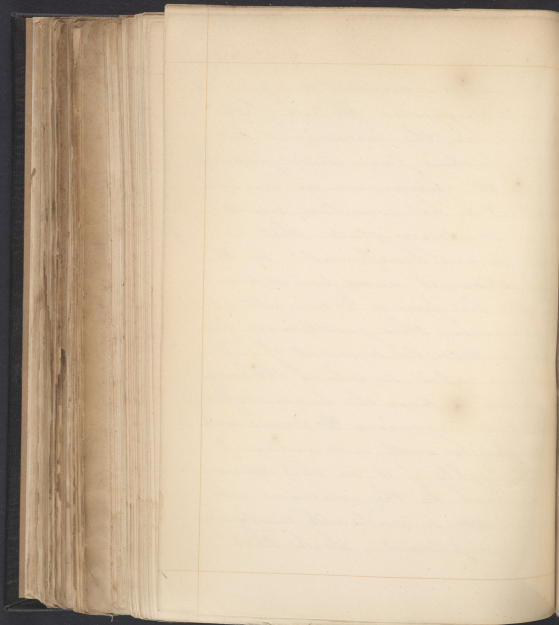


So far with respect to the local
treatment; of the general means
different remedies are extolled by
different authors; of those
which seem to be preeminently
useful, we shall mention the
cold affusion, mercury, opiates,
wine & bark, the warm bath,
cathartics, blisters & antispasmodics.

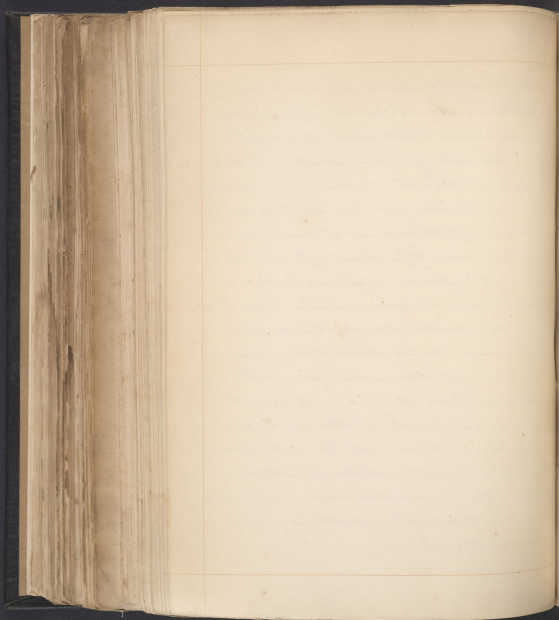
The application of cold water in
Typhus is a very ancient prac-
tice, being recommended by
Hippocrates himself; but he con-
fined its use to the young & robust
& to the idiopathic form of the disease,
believing the symptomatic always
fatal. It however never came
into much repute, untill Dr.
Lind who has written a treatise



on the diseases incident to warm climates suggested the use of the remedy on the principle that as "the locked jaw most frequently makes its appearance in warm weather & in hot countries, would not a contrary state, that is cold, prove beneficial?" on this suggestion it was put in practice by his friend Dr. Wright of Jamaica; this gentleman has given a detailed account of half a dozen cases in which this remedy seemed to have the happiest effects; & the late ingenious Dr. Camille wax cold affixed with advantage & speaks highly of it in this disease. Dr. Moirand on the contrary, who has written a valuable treatise on this complaint, thinks that

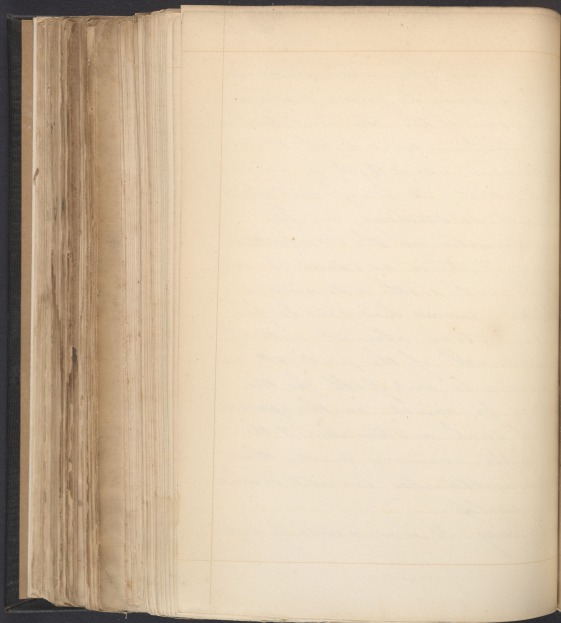


cold affusions have been too highly
extolled. He observes "I must own
that I never saw any good effects
from the use of cold water in this
disease, I think I have seen it fully
tried in nine or ten instances, &
in some of them as I conceived
with evidently bad effects" he
continued "from different observa-
tions which I have had from time
to time, with several medical
gentlemen who had seen many
instances of the disease, not only
in the colonies of South America
but in several of the W. India
Islands, I was led to conclude
that the application of cold water,
either by immersion or affusion
was gradually getting into
disrepute."

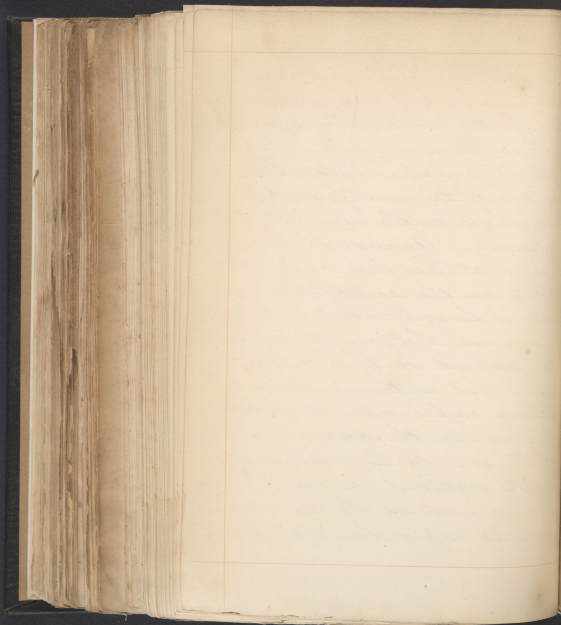


The difference of sentiment on this remedy may be owing perhaps to the form of the disease & the state of the system in which these gentlemen used it; it is allowed by all, that its beneficial effects are not so striking in the Symptomatic as the Idiopathic form; & it is evident it cannot be used with advantage after the disease has gone so far as to destroy almost entirely the strength of the patient, as it would be impossible for the system to react on the application of such a stimulus, & the use of this remedy under these circumstances would be worse than useless.

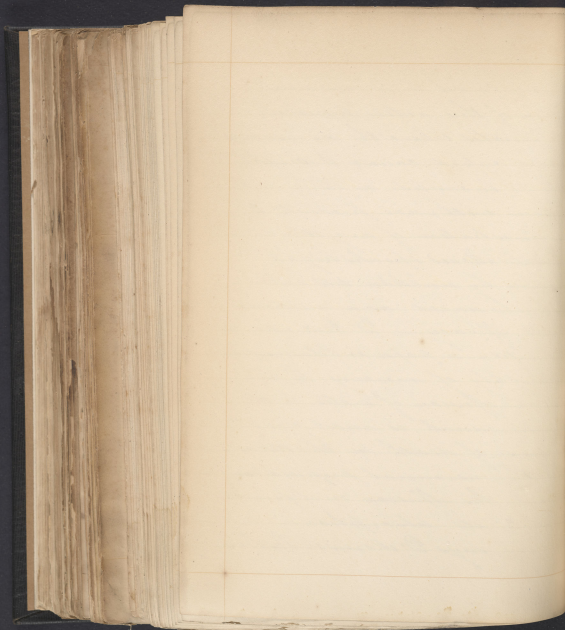
Mercury. It was naturally super-



proved that a medicine capable
of bringing on that sudden & new
action in the constitution, a power
which we know mercury so pecu-
liarly to possess, would be likely
to be one of the most formidable
combatants in this very distress-
ing disease. Against the use of
mercury, it has been urged, that
its effects on the constitution can
seldom be brought about in time
in a disease that mostly carries
off the patient in three or four
days, & that in those mild and
lengthened cases, where it appeared
to be of service, the disease most
probably would have terminated
happily without its use. In
warmer countries the disease is
seldom so rapid, but that there



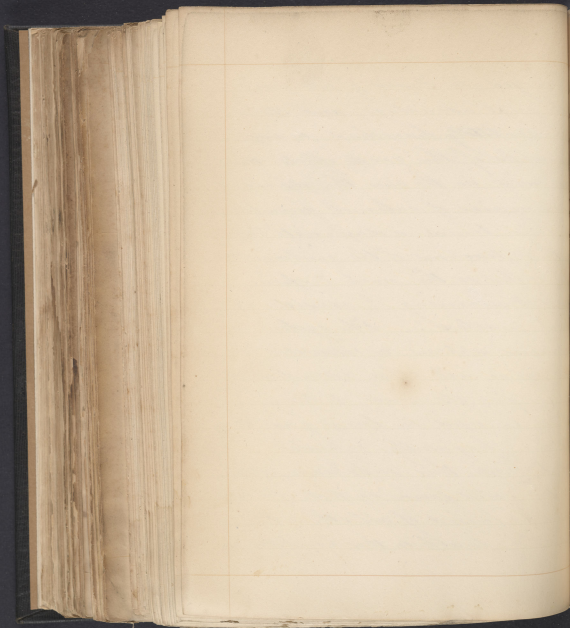
is time to mix in a considerable
portion of this active mineral, &
in climates where the disease runs
a more rapid course it ought
never to be omitted, as its use neither
interferes with, nor prevents the
administration of any other remedy.
Dr. Donaldson speaks highly of
mercury by unction till salivati-
on be produced as a medicine
of great efficacy. — Dr. Reid who
has written a paper on Cerebra speaks
very highly of mercury, he ima-
gines an effusion of water in the
spinal canal is most generally
the cause of death in this disease,
& that the mercurial preparations
prevent this effusion or, if formed,
promote its absorption.
Mercury says Dr. Harrison has been



employed in France of late years
with great advantage, and states,
"I undoubtedly have had many
examples of the good effects of
mercury in the cure this disease.

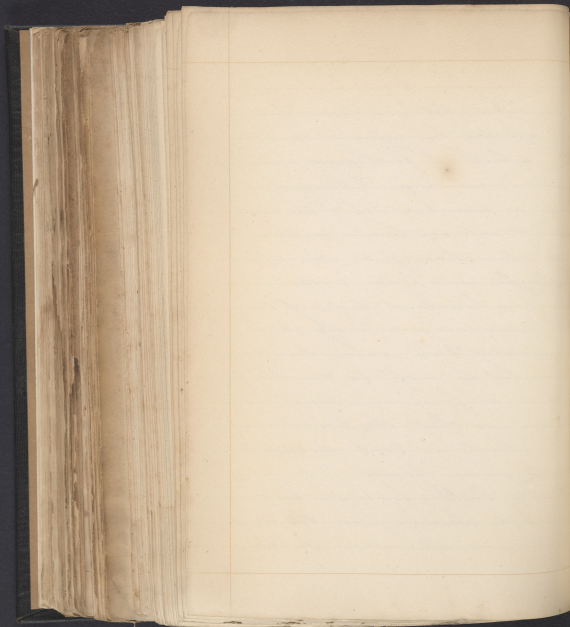
Four grains of calomel given two
or three times a day, with two
or three machines of the ointment
well rubbed on the neck & spine
night & morning I consider ex-
cellent practice." The system in
Potamus appears as insensible to
this as to all other remedies ne-
cessary for its cure, & therefore
must be used in large quanti-
ties and frequently repeated.

Opium, this substance, either
in the solid form or that of Wine
will be found of all others the
most valuable in this horrid disease.

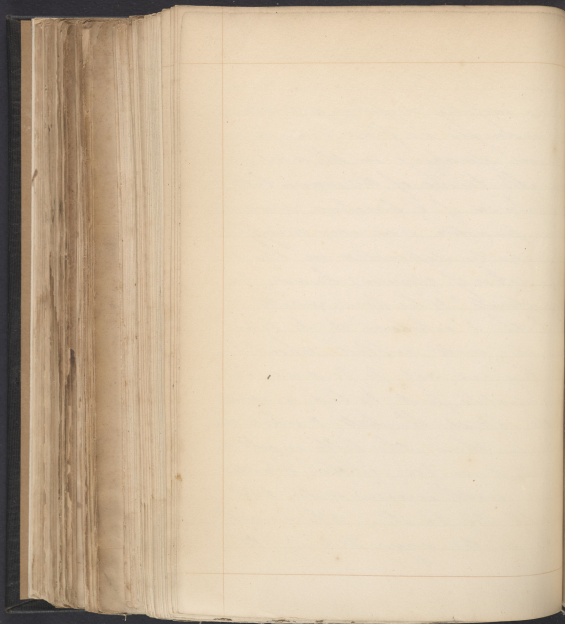


It must be given however in very large doses, Veterans being but little affected by doses of this medicine, which at first now would appear enormous; Dr. Cline has given as much as 3℥ of the Wine within twenty six hours, without any alleviation of the symptoms; we should never begin with less than one hundred drops of the Wine, increasing rapidly each succeeding dose every two hours; it would be well to give the Wine in three or four ounces of spirits or wine, so that the patient may take about a pint during the twenty four hours.

Opium Bath, from the beneficial effects observed from this remedy in various spasmodic diseases

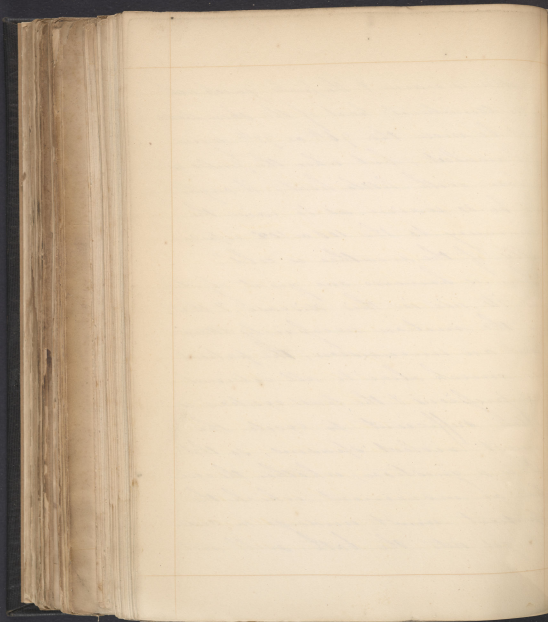


we should be led to conclude it might
be very usefully employed in tetanus,
& accordingly we find many prac-
titioners speaking in the most fa-
vourable terms of the warm bath.
Dr. Chalmers of S. Carolina especially,
whose practice was very successful,
principally depended on this, &
large doses of opium; he advises
his patients "to lie horizontally in
the bath, & wherein it to be ex-
tremely well rubbed, when taken
out they are not to be dried, but
immediately put to bed, wrapped
in the softest blankets, & while they
remain there, the belly ought to
be stuffed, or two or three bladders
filled with warm water kept
constantly to it. The warmth
of the water says Dr. C. if the



weather is warm & the pulse quick with
a preternatural heat of the skin, should
not be more than 96th or 98th degree
of Fahrenheit; but when the pulse is
slow with little heat, it ought
to be so warm as to raise the
mercury to the 100 or 102° especi-
ally if the weather is cold."

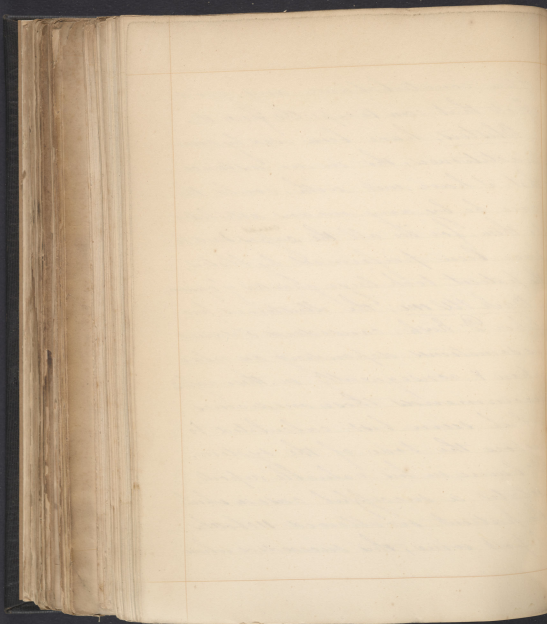
There is however one great objection
to its use in this disease, & that
is the motion necessarily attend-
ant an immersion, the patient
is much alive to all external
impressions & the least exertion is
often sufficient to excite the
most violent spasms; so that
it is a question, whether the exer-
tion or movement which the
patient must undergo in order
to get into the bath, will not



often counterbalance any good effects that can be expected from it.

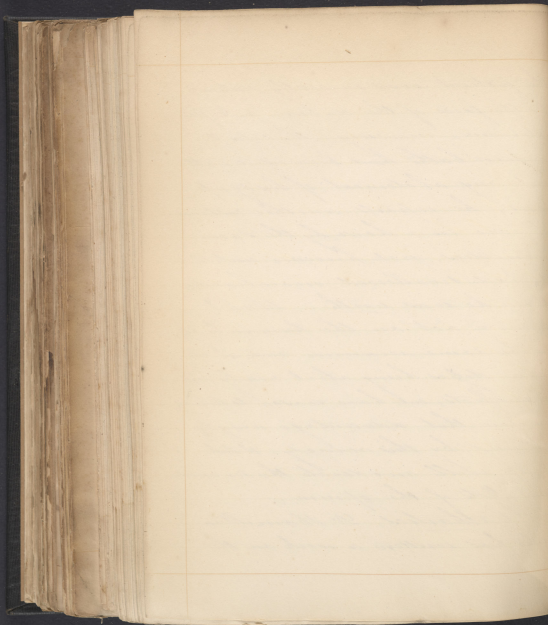
Blisters, have been used by some practitioners, tho in no instance that I have met with, could be sure be by any means attributed to them, for in all the ^{cases} said to have been performed by blisters, the patient took large quantities of opium.

Back Pain; the illustrious professor D. Rush, considered it various as sometimes depending on relaxation & consequently in these cases recommends those medicines which seem best calculated to restore the tone of the system; Dr. Currie in his valuable reports, relates a successful case in which the patient swallowed 160 drops of port wine, this succeeded when



the patient was evidently sinking
by the force of the disease, and after
opium, mercury, the cold &
warm baths had been used with-
out any abatement of his symp-
toms, he reports another instance
of cure in a horse by the same
remedies, not however until
he had swallowed more brandy
than he was worth. As the
Opium act on the human body
in the same manner and in cer-
tain degrees being about nearly sim-
ilar effects, we have reason to believe
therefore that advantage may be
obtained by this remedy, where-
wise will moderate the second-
ary effects of the opium.

Cathartics, Dr. Hamilton
who has written a work on the

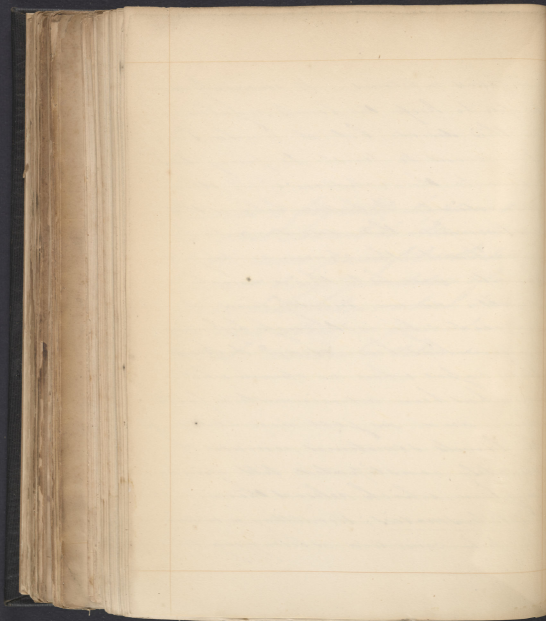


use of purgatives in diseases, speaks
highly of cathartics in Cholera, and
thinks it probable that many of those
cures reported as cured by various
remedies, cured only by opening the
bowels, such for instance as the
cold bath, mercury & antispasmodics;
his reasons for using them are
1st the constipated state of the
bowels preceeding and subsequent
to an attack of Cholera. 2^d the
probable effect of the heat inducing
biliary disease, in which this
class of remedies are very useful.
3^d the great advantage derived
from them in various spasmodic
diseases as, Chorea, Hysteria &c. &c.
4th what he adduces from the
practice of others, as presumptive
evidence of the utility of giving

* Besides it frequently happens that
a stool cannot be obtained even
by the most powerful cathartics
untill large quantities of opium
have been taken, which seems
to bring about a general relax-
ation. Morrison on Catarrhs.

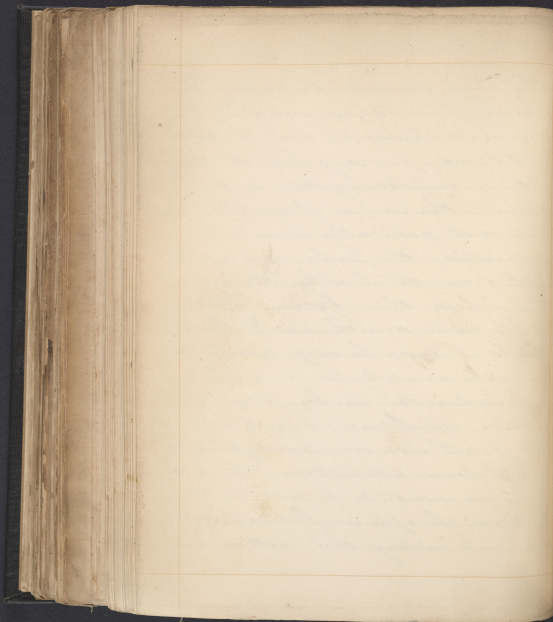
purgatives in Catarrhs. It certainly is
proper to keep the bowels regular
in this disease, but it would be
dangerous to trust to purgatives
alone, to the exclusion of all other
remedies. Dr. Cullen believes that
constipation in this disease is to be
ascribed to the opium employed
for its cure, but this I much
doubt, as we mostly find it
preceded by constipation before any
opium has been used, & it occurs
those cases where no opium what-
ever has been administered for the
cure, and as just now stated,
the bowels sometimes remain ob-
stinately constipated till opium
is given, which relieves them.

Antispasmodics; Nostrum is certainly
to be considered as belonging to



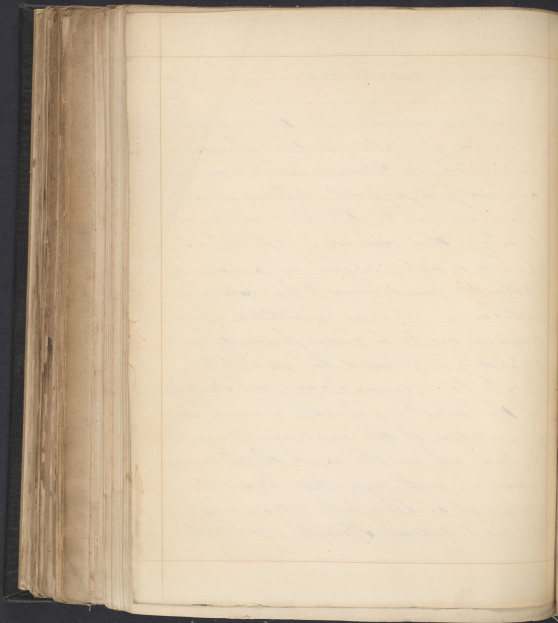
this class, but notwithstanding its
powerful antispasmodic effect; it
does not appear to have succeeded
in Iceland; judging from the state
of the circulatory system in this
disease, this mode of sedation
does not generally seem to be
indicated, the pulse varying but
little from its healthy standard;
but where there appears to be a
phlogistic diathesis is, Dr. Rush
thinks it may be very advantage-
ously employed.

Barbados Oil, Amber, Musk,
Castor, Aloes & Campcher,
have all been employed, perhaps
with some advantage; they might
however never be used to the
exclusion of opium, but as in some
measures aiding that article may



be useful auxiliaries.

Having enumerated the various
modes of treatment that have been
pursued in Cholera, I shall now as
concisely as possible deliver my
opinion as to the best mode of
treating this disease. The bowels
should be kept as free as possible by
cathartic medicines & purgative in-
jections. Large quantities of Lau-
danum are to be given frequently and
rapidly increased in quantity.
Next to opium I consider Mercury
as the most valuable remedy, large
quantities of the ointment may be
rubbed in, on the neck, thigh and
axilla, with repeated doses of
calomel or blue pill internally.
Wine & Ardent Spirits should be



given freely, as the system is as
insensible to their action in this
disease as to that of other medicines,
what in a state of health would
produce stupor & intoxication,
now has no action on the system.

The warm Bath, if one can be ob-
tained that is large & commodious
may perhaps be found useful.

When the disease is over come
the system no doubt will be left in
a debilitated state, tonic as
bark, wine &c &c are to be used.

